

DP-309304

## ROTARY POSITION SENSOR

## ABSTRACT OF THE DISCLOSURE

A rotary position sensor (200) includes a magnet assembly (200') having first and second poles (26, 28), a nonuniform magnetic field ( $B''$ ) in a working air gap (22'') between the poles, and an axis of rotation ( $A, A', A''$ ).

5 A magnetosensitive device (24'') is located within the working air gap (22'') at a first selected distance ( $X, Y, Z$ ) from the axis of rotation ( $A, A', A''$ ). For a given range of motion, the magnetosensitive device (24'') is subjected to a progressively increasing magnetic flux density ( $R, R'$ ). The component of the output signal due to this increasing flux density is additive to the component due

10 simply to rotation of the magnetic field ( $B''$ ) about the magnetosensitive device (24''), effectively reducing the total output signal's deviation from linearity. Alternatively, a magnet assembly (300') includes a pair of pole pieces (310, 312) and a nonuniform magnetic field ( $B'''$ ) in a working air gap (22''') between the pole pieces (310, 312). A magnetosensitive device (24''') is

15 located within the working air gap (22''') at a first selected distance ( $X'$ ) from the axis of rotation ( $A'''$ ).